1077-55-2265   **Paul Bendich**, **Herbert Edelsbrunner** and **Dmitriy Morozov***, dmitriy@mrzv.org, and **Amit Patel**. *Homology and Robustness of Level and Interlevel Sets.*

Levelsets of real-valued functions play a prominent role in scientific visualization. For instance, clusters of galaxies appear as components in the slices of the mass density function. Noisy data produces spurious components which scientists must filter out.

In this talk, we consider the preimages of intervals of real-valued functions and their homology groups. We quantify the robustness of the homology classes under perturbations of f using well groups. We show how to read the ranks of these groups from the extended persistence diagram of f. (Received September 22, 2011)